

SUPPORT FOR THE AMENDMENTS

This Amendment cancels Claims 11 and 13-14; and amends Claims 1-2, 12, 15, 18 and 23. Support for the amendments is found in the specification and claims as originally filed. In particular, support for Claim 1 is found in Claim 2 and in the specification at least at page 9, line 25. Support for Claim 12 is found in the specification at least at page 22, lines 8-16. No new matter would be introduced by entry of these amendments.

Upon entry of these amendments, Claims 1-10, 12 and 15-27 will be pending in this application. Claim 1 is independent.

REQUEST FOR RECONSIDERATION

Applicants respectfully request entry of the foregoing and reexamination and reconsideration of the application, as amended, in light of the remarks that follow.

Applicants thank the Examiner for the indication in the Office Action at page 4, section 7 that Claims 6-10 and 15-27 would be allowable if rewritten independent form including all of the limitations of the base claim and any intervening claims. However, for the reasons given below, Applicants respectfully submit that the claims, as amended, are allowable.

The present invention relates to an amorphous porous solid comprising a mixed oxide of silicon, aluminum and phosphorus, having porosity and acidity characteristics suitable for use as a catalyst or as an active carrier of a catalyst for a variety of acid-catalyzed industrial chemical processes. Specification at page 1, lines 12-17.

Claims 1-5 and 11-14 are rejected under 35 U.S.C. § 102(b) over U.S. Patent No. 5,230,789 ("Chao").

Chao discloses:

... hydrocarbon conversion processes using a catalytic composite which is an amorphous solid solution of phosphorus, silicon and aluminum oxides. The composite is characterized in that it contains from **about 5 to about 50 weight percent Al<sub>2</sub>O<sub>3</sub>, from about 10 to about 90 weight percent SiO<sub>2</sub> and from about 5 to about 40 weight percent P<sub>2</sub>O<sub>5</sub>** and has pores whose average diameters range from about 30 to about 200 Angstroms. The composite is further characterized in that it has a pore volume of about 0.35 to about 0.75 cc/g and a surface area of about 200 to about 420 m<sup>2</sup>/g. Chao at abstract (emphasis added).

Regarding Chao's composite, the Office Action asserts:

The composite is characterized in that it contains about 5 to about 50 weight percent Al<sub>2</sub>O<sub>3</sub>, from about 10 to about 90 weight percent SiO<sub>2</sub> and from about 5 to about 40 weight percent P<sub>2</sub>O<sub>5</sub> (**which gives** a composite with **atomic ratios of Si/Al = 15 and P/Al = 0.7**), .... Office Action at page 3, section 6, lines 4-7 (emphasis added).

Pursuant to MPEP 2144.02 and 2144.03, Applicants respectfully request that the Examiner provide the rationale behind the Office Action assertion that Chao's disclosure "gives a composite with atomic ratios of Si/Al = 15 and P/Al = 0.7".

Actually, Chao does not disclose a range of Si/Al (weight ratio or mole ratio) or a range of P/Al (weight ratio or mole ratio) in Chao's composite.

Chao discloses **only two** examples, Samples 3 and 4, that contain P<sub>2</sub>O<sub>5</sub>, Al<sub>2</sub>O<sub>3</sub> and SiO<sub>2</sub>. Chao at column 7, Table 1.

Chao's Sample 3 contains 30 wt% P<sub>2</sub>O<sub>5</sub>, 28 wt% Al<sub>2</sub>O<sub>3</sub> and 42 wt% SiO<sub>2</sub>. Thus, Chao's Sample 3 has (basis 100 g) an

$$\text{atomic ratio Si/Al} = [(1)(42g)/(60.08g/mol)]/[(2)(28g)/(101.96g/mol)] = \mathbf{1.27}$$

Chao's Sample 4 contains 13 wt% P<sub>2</sub>O<sub>5</sub>, 27 wt% Al<sub>2</sub>O<sub>3</sub> and 60 wt% SiO<sub>2</sub>. Thus, Chao's Sample 4 has (basis 100 g) an

$$\text{atomic ratio Si/Al} = [(1)(60g)/(60.08g/mol)]/[(2)(27g)/(101.96g/mol)] = \mathbf{1.88}.$$

However, Chao fails to disclose or suggest the independent Claim 1 limitation of "an atomic ratio **Si/Al** ranging from **20 to 250**". Thus, the rejection over Chao should be withdrawn.

Any *prima facie* case of obviousness based on Chao is rebutted by the significant increase, during hydrocracking of linear paraffins, of desirable highly isomerized high boiling residue (such as can be used as a LUBE base without any further treatment or with a slight dewaxing treatment) that is achieved using the catalytically active amorphous porous solid of the present invention with "an atomic ratio Si/Al ranging from 20 to 250" in comparison to that achieved when the atomic ratio Si/Al is only 10. This is demonstrated in the attached Declaration Under 37 C.F.R. § 1.132.

Chao discloses that a catalyst prepared with a silica/alumina/phosphate solid solution support has a smaller rate of deactivation and a higher kerosene yield than catalyst prepared with a silica/alumina solid solution support. Chao at column 8, line 66 to column 9, line 2. However, Chao is silent about the increased amounts of highly isomerized high boiling residue that is achieved in accordance with the present invention by limiting Si/Al to the range of 20 to 250.

Thus, any *prima facie* case of obviousness based on Chao is rebutted. For this additional reason, the rejection over Chao should be withdrawn.

Claim 11 is objected to because "[i]n claim 12, the word 'isomeriztion' appears to be the word 'isomerization'". To obviate the objection, Claim 11 is canceled, and in Claim 12 "isomeriztion" is changed to --isomerization--.

Claims 11-14 are rejected under 35 U.S.C. § 101. To obviate the rejection, Claims 11 and 13-14 are canceled, and Claim 12 is amended.

In view of the foregoing amendments and remarks, Applicants respectfully submit that the above-identified application is in condition for allowance. Applicants respectfully request favorable consideration and prompt allowance of the application.

Should the Examiner believe that anything further is necessary in order to place the application in even better condition for allowance, the Examiner is invited to contact Applicants' undersigned attorney at the telephone number listed below.

Respectfully submitted,

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Attached:

Declaration Under 37 C.F.R. § 1.132